FE363

Diagram No. 1211-3

NOAA FORM 76-35A

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL OCEAN SERVICE

DESCRIPTIVE REPORT

FE363

Type of Survey ..... Field Examination

Field No. RU-10-4-91

Registry No. FE-363SS

LOCALITY

State ..... Rhode Island

General Locality ..... Block Island Sound

Sublocality ..... Offshore--Green Hill Beach to Weekapaug Point

1991

CHIEF OF PARTY
LCDR N.E. Perugini

LIBRARY & ARCHIVES

DATE ..... November 3, 1993

☆U.S. GOV. PRINTING OFFICE: 1987—756-980

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13215
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12300

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NOAA FORM 77-28 (11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

HYDROGRAPHIC TITLE SHEET

REGISTER NO.: FE-363SS

FIELD NO.: RU-10-4-91

INSTRUCTIONS - The Hydrographic Sheet should be accompanied by this form, filled in as completely as possible, when the sheet is forwarded to the Office.

State: Rhode Island

General locality: Block Island Sound

Locality: Offshore---Green Hill Beach to Weekapaug Point

Scale: 1:10,000 Date of survey: July 24 to August 6, 1991

Instructions dated: March 11, 1991 Project No.: OPR-B660

Vessel: NOAA Ship RUDE (9040)

Chief of party: LCDR Nicholas E. Perugini

Surveyed by: N. Perugini, P.L. Schattgen, M.J. Oberlies, J. A. Illg[illegible], D. E. Williams

Soundings taken by echo sounder, pneumatic gauge

Graphic record scaled by: NEP, PLS, MJO, JAI, DEW

Graphic record checked by: NEP, PLS, MJO, JAI, DEW

Protracted by: NA Automated plot by: ~~NA~~ XYNETICS 1201 PLOTTER (AHS)

Verification by: ~~NA~~ ATLANTIC HYDROGRAPHIC SECTION PERSONNEL

Soundings in meters at MLLW

REMARKS: All times recorded in UTC

NOTES IN THE DESCRIPTIVE REPORT WERE MADE IN RED DURING OFFICE PROCESSING.

SURF/AWOIS check
11/10/93 MCR

[redacted]

KWW 11/22/93

NOAA FORM 77-28 SUPERSEDES FORM C&GS-537.

U.S. GOVERNMENT PRINTING OFFICE: 1986 - 652-007/41215

TABLE OF CONTENTS

A. PROJECT

A.1 This survey was conducted in accordance with Hydrographic Project Instructions OPR-B660-RU-91, Southern New England Coast, Connecticut and New York.

A.2 The original date of the instructions is March 11, 1991.

A.3 There were no changes to the project instructions which effect this survey.

A.4 A sheet letter was not specified in the project instructions.

A.5 Project OPR-B660-RU-91 responds to requests from the Northeast Marine Pilots, Inc., of Newport, Rhode Island to disprove or verify and provide least depths for certain wrecks and obstructions in Long Island, Block Island, and Rhode Island Sounds. Also, the U.S. Navy, as well as state and local governments have requested updated bathymetric and hydrographic survey data of this area for use in proposed studies and in the construction of new charts.

B. AREA SURVEYED

B.1 This survey is located between Watch Hill and Green Hill, Rhode Island and Block Island North Reef, in Block Island Sound. Depths in the survey area are between 13 and 39 meters (45 and 128 feet).

The primary traffic in the area is tug-and-barge transports, transiting between Long Island Sound and points to the East (Buzzard's Bay and Boston). Also, there is a significant amount of ferry traffic between the East side of Block Island and Point Judith, Rhode Island. Small pleasure craft are also abundant in the area.

B.2 The items are identified on the pre-survey review chart, extending from latitude 41° 16.0' to 41° 20.5' North and from longitude 071° 37.0' to 071° 46.5' West.

B.3 Data acquisition began on July 24, 1991 (DOY 205) and concluded on August 6, 1991 (DOY 218).

C. SURVEY VESSELS

C.1 The following vessels were used during this project:

VESSELS	ELECTRONIC DATA PROCESSING NUMBER	PRIMARY FUNCTION
NOAA Ship RUDE (S590)	9040	Hydrography/ Side Scan Operations
RUDE Launch (RU3)	1290	Diving Operations

C.2 No unusual vessel configurations or problems were encountered.

D. AUTOMATED DATA ACQUISITION AND PROCESSING

D.1 Survey data acquisition and processing were accomplished using the HDAPS system with the following software versions:

Program	Version	Dates Used
SURVEY	6.03	July 24 - August 6
DAS_SURV	6.04	July 24 - August 6
POSTSUR	5.14	July 24 - August 6

D.2 Other software includes VELOCITY 1.11 dated March 9, 1990 used to generate sound velocity corrector tables, and MTEN (dated between 1985 and 1986) for horizontal control verification and establishment.

D.3 There were no nonstandard automated acquisition or processing methods used.

E. SONAR EQUIPMENT

E.1 Side scan sonar operations were conducted using an EG&G Model 260 slant range corrected side scan sonar recorder and a Model 272-T (single frequency) towfish. All side scan operations were conducted from the RUDE (vessel # 9040). The following list shows equipment serial numbers and corresponding dates used:

Equipment Type	Serial Number	Dates Used
Recorder	0012105	July 24 - August 6
Towfish	0011908 (Single Freq)	July 24 - August 6

E.2 The side scan sonar towfish was configured with a 20° beam depression, which is the normal setting and which yields the best beam correction.

E.3 The 100 Khz frequency was used throughout this survey.

E.4 a) The 100 meter range scale was used for all main scheme side scan coverage. The 50 and 75 meter range scales were used during contact development, for a higher definition side scan record.

The depth of water encountered throughout the survey area usually exceeded 20 meters, allowing excellent imagery on the 100 meter range scale.

Line spacing for main scheme coverage was determined using the formula provided in section 7.3.2.1 of the Field Procedures Manual ($LS_{max} = 2RS - 2ECR_{max}$). The predicted maximum error circle radius (ECR) did not exceed 15 meters within the survey area, so a maximum line spacing of 170 meters was established for the 100 meter range scale.

b) Daily confidence checks were obtained by towing the fish past previously located contacts or noting recognizable bottom characteristics at the edges of the sonar record.

c) Refer to the individual AWOIS investigation procedures (section N) for required and actual side scan coverage.

d) During the entire survey, slight interference due to thermoclines was encountered. However, this interference did not substantially degrade the return, and with the 30-meter overlap the RUDE is confident that complete side scan coverage for disproved items was achieved.

Also, on DOY 210 a problem developed with the electrical connection between the fish and cable, resulting in sporadic

streak-like blanking of the sonar trace. Most of these data were rejected, and since the item was found (and dived on), no further side scan coverage was conducted.

e) The towfish was deployed from the stern during the entire survey.

E.5 The gently sloping sand bottom in this survey area was relatively free of contacts when compared to the area covered near Point Judith, RI during basic survey H-10378. Contacts found during the main scheme lines (100 meter range scale) were further investigated with the side scan sonar using the 50 meter range scale, running 90 degrees to the path of the first sighting. The four located AWOIS items were all investigated by divers.

E.6 With the limited number of side scan contacts encountered during this survey, early investigation was normally achieved using the 50 and 75 meter range scales. Therefore, contact processing procedures were very simple.

Overlap was checked on-line using the real-time plot and the edited swath plot for holidays. All holidays were filled in by running additional side scan sonar lines.

F. SOUNDING EQUIPMENT

F.1 All hydrographic soundings were acquired using a Raytheon 6000N digital survey fathometer (DSF). One DSF 6000N was used during the entire survey: S/N A106N.

F.2 All diver-determined least depths were measured with a pneumatic depth gauge. RUDE is equipped with two 3-D Instruments Inc. Precision Direct Drive Depth Gauges:

1) 0- 70 fsw (feet salt water)	S/N 142697
2) 0-140 fsw	S/N 8606822

The 0-70 fsw gauge was used in water depths less than 20 meters (approx. 70 feet), and the 0-140 fsw gauge was used when the water depth exceeded 20 meters.

F.3 Refer to section G.4 for information on pneumatic depth gauge system checks. DATA FILED WITH FIELD RECORDS

F.4 Both the high (100 kHz) and the low (24 kHz) frequency sounding data were recorded during data acquisition. Only high frequency soundings were selected for plotting.

G. CORRECTIONS TO SOUNDINGS

G.1 a) The velocity of sound through water was determined using a Digibar Sound Velocity Probe (S/N 169), made by Odom. Data Quality Assurance Tests were conducted before each velocity cast to ensure the meter was within tolerance.

All data were processed using Velocity 1.11 software. The computed velocity correctors were entered into the HDAPS sound velocity tables and applied on-line to both high and low frequency soundings. Sound velocity correctors applied to this survey were obtained on the following dates:

Cast Number	DOY	Latitude	Longitude	HDAPS Table #	Applied to Days
10	203	41° 17.2' N	71° 31.0' W	10	205-207
11	218	41° 16.3' N	71° 16.7' W	11	210-218

b) There was no variation in the DSF-6000N instrument initial.

c) No instrument correctors to the DSF-6000N were required.

d) Two dual lead line comparisons with the DSF-6000N were made:

April 25, 1991 at 41° 35.6'N 71° 21.3'W (25 ft depths)
July 22, 1991 at 41° 20.9'N 71° 29.1'W (35 ft depths)

The greatest variation between leadline and DSF soundings was less than 0.2 meters for both comparisons. Considering the ship's motion and the scope in the leadline from current, this is excellent agreement and provides an adequate check that the echosounder was functioning properly. Also, comparisons between diver determined least depth by pneumatic depth gauge and DSF soundings over particular items (with prominent features) were normally within 0.5 meters after reduction. Therefore, correctors from direct comparison were determined to be zero.

e) All sounding correctors were applied to both the narrow (100 kHz) and wide (24 kHz) beams.

f) During the winter 1988 dry dock period, an exact vertical measurement was taken from the DSF transducer to a fixed point on the bridge wing. After the ship was re-floated, the height above the waterline was determined for this point. The ship's static draft was thereby calculated to be exactly 2.26 meters (7.4 feet). This draft value was applied to the sounding data via the HDAPS offset table.

g) Settlement and squat correctors for the RUDE were determined on the Elizabeth River, Norfolk, Virginia on March 13, 1991. An observer, stationed with a level on a pier, measured changes in relative height by sighting to a staff held at the

longitudinal position of the ship's transducer. The ship steamed directly toward and then away from the observer. Both runs were averaged and applied to soundings through the HDAPS offset table.

However, the actual corrector values derived from these data were computed incorrectly and consequently used for this survey. This problem was resolved by using the HDAPS program "REAPPLY". See section G.2 for a detailed explanation of this situation.

h) Heave data were acquired by a Datawell heave, roll and pitch sensor (S/N 19128-C), and were applied to soundings in real time. Only the heave corrections were applied to the plotted soundings.

See SEPARATE IV for all data records concerning corrections to soundings.*

G.2 The HDAPS program "REAPPLY" was used to reapply corrector tables to soundings. An evaluation of the most appropriate tables for each day's data was made, and compared to the tables actually used. New tables were then applied to those days which differed.

As stated in section G.1.g, settlement and squat values were computed incorrectly and used in the HDAPS offset table during this survey. The "REAPPLY" program was used to correct this problem. Offset table #3 was changed to show the adjusted settlement and squat correctors, and then the table was reapplied to all soundings acquired during this survey.

G.3 As stated in paragraph G.2, corrector tables were reapplied to soundings during processing, so that the most relevant correctors were applied to plotted soundings. The corrected offset table #3 was reapplied to all soundings.

G.4 The ship's shallow water (0-70 fsw) and deep water (0-140 fsw) pneumatic depth gauges were calibrated by Instruments East, Inc. of Norfolk, VA on January 31, 1991. Corrector data from the calibrations were plotted graphically, but were not applied to pneumatic depths because they were less than 0.1 meters (see plots in SEPARATE IV).*

Periodic system checks were performed on the gauges as illustrated HSG 55. Rarely did the gauges check when substantial currents were present. Since the currents in the survey area were fairly strong and seemingly constant, it became practice to perform system checks on the gauges during times of ideal conditions. Therefore, days of use do not correspond to days on which the checks were performed.

G.5 Generally, sea conditions greater than one meter affected the fathogram, creating a trace of constant peaks and deeps. But the application of heave correctors to raw echo soundings appeared to accurately represent true depths.

* DATA FILED WITH FIELD RECORDS

G.6 a) The tidal datum for this project is mean lower low water. The operating tide station at Newport, Rhode Island (845-2660) served as direct control for datum determination. Station (845-5083), located at Point Judith, RI served as reference station for predicted tides. Data for Newport tides were provided on floppy magnetic disk before the start of the project.

b) The height and time correctors listed below were taken from Table 2 of the East Coast of North and South America Tide Predictions, and applied to the digital tide data using the HDAPS software:

NO.	PLACE	TIME		HEIGHT	
		High water	Low water	High water	Low water
1191	Point Judith Harbor of Refuge	-10 min	+17 min	* 0.88	* 0.86

Tidal correctors were applied on-line using the HDAPS predicted tide tables 7 and 8.*

c) Zoning for this project is consistent with the project instructions.

A request for smooth tides was mailed on October 2, 1991.*

* APPROVED TIDES APPLIED DURING OFFICE PROCESSING.

H. CONTROL STATIONS SEE ALSO SECTION 2.9. OF THE EVALUATION REPORT.

H.1 The horizontal datum for this project is the North American Datum of 1983 (NAD 83).

H.2 The list of Horizontal Control Stations is located in Appendix III.

H.3 Newly established horizontal control stations were surveyed using standard NGS approved surveying techniques; primarily the Geodetic Direct and Resection procedures. These data were then entered into the NGS software "MTEN", which computed the Latitude and Longitude of the new station using the NAD 83 ellipsoid.

Existing stations were verified by comparing observed horizontal angles and distances (to known stations) with angles and distances provided by inverse computations using "MTEN".

All horizontal control stations used during this survey are Third-order, Class I.

H.4 All horizontal control work was conducted within the "Providence" NGS Quadrant.

H.5 Refer to the Horizontal Control Report (submitted to N/CG 233 under separate cover) for specific procedures and sites surveyed by the RUDE.

H.6 There were no photogrammetric problems, positioning problems or unconventional survey methods pertinent to this survey.

I. HYDROGRAPHIC POSITION CONTROL See also section 2.9. of the Evaluation Report.

I.1 Falcon Mini-Ranger was used for vessel positioning during this survey. See section I.6 for an explanation of incidental ARGO use.

I.2 At no time during this survey did the maximum residual consistently exceed 5 meters (0.5 mm at the survey scale), and the 95% confidence error circle radius never consistently exceeded 15 meters (1.5 mm at the survey scale).

I.3 Control Equipment:

Mini-Ranger:
Falcon 484 by Motorola Inc.
Serial Numbers:

RPU	F-0246	
R/T	F-3409	
R/S:	E-2969	(code 6)
	F-3241	(code 4)
	E-2907	(code 3)
	E-2926	(code 8)
	F-3244	(code 5)

I.4 As stated in section 3.1.3.3 of the Field Procedures Manual for Hydrographic Surveying, a continuous critical system check is obtained "when data are acquired with three or more LOP's and ECR and maximum residual criteria are being met as required in section 3.1.3.1" (of the same manual). RUDE routinely conducted survey operations using at least three LOP's, and all other positioning criteria were met as required (see section I.2).

A pre-project baseline calibration of the Mini-Ranger system was conducted at the Atlantic Marine Center on March 6, 1991. Two baseline calibrations were conducted in Bristol, RI on June 2 and July 14, 1991 and one in Newport, RI on October 19, 1991. See the Electronic Control Report submitted under separate cover for data records of the calibrations.

I.5 The Falcon system required calibration data to be applied to raw ranges. The range corrector and minimum acceptable signal strength (MASS) for each Mini-Ranger Reference Station was entered into the HDAPS system using the Pre-Survey C-O table. These tables provided the mechanism by which HDAPS automatically applies the proper range corrector and removes from the position computation those LOP's with signal strengths below MASS.

I.6 a) On DOY 207 an ARGO range was calibrated (as an extra LOP) with the Falcon equipment. This range was only used between the first and second fix of the day (197 to 198). For the following reasons, no ARGO information is included in this report:

- this is the only use of ARGO equipment during this survey, and the duration was very short
- the AWOIS item (under investigation) was later found
- no noticeable position change is evident on the swath plot
- the data has been rejected.

There were no other unusual methods of operating or calibrating electronic positioning equipment.

b) There were no occurrences of equipment malfunctions or substandard operation.

c) There were no occurrences of unusual atmospheric conditions that may have affected data quality.

d) There were no occurrences of weak signals or poor geometric configurations of a duration to significantly compromise data quality.

e) There were no systematic errors encountered with vessel positioning.

f) Antenna positions were corrected for offset and layback, and referenced to the position of the DSF 6000N transducer. These correctors were entered in the HDAPS Offset table, and applied on-line to the positioning algorithm. Refer to SEPARATE III for a copy of offset table 3, which was the only table used during this survey.*

g) Offset and layback distances for the A-frame (tow point) were entered in the HDAPS Offset table and applied on-line. These offsets, along with the cable length, towfish height, and depth of water, were used by the HDAPS system to compute the position of the towfish. Refer to SEPARATE III for offset table number 3.*

* DATA FILED WITH FIELD RECORDS.

J. SHORELINE SEE SECTION 2.b OF THE EVALUATION REPORT.

No field sheets encompassed any shoreline.

K. CROSSLINES SEE ALSO SECTION 3.a. OF THE EVALUATION REPORT.

K.1 The percentage of cross-lines to main scheme lines varies between each AWOIS investigation. An overall computation of this percentage was not made.

K.2 The agreement between mainscheme and crosslines is very good, generally less than 0.2 meters (0.6 feet), and rarely exceeding 0.3 meters (1 foot).

K.3 No significant differences between mainscheme and crosslines were noted.

K.4 The same sounding equipment was used to run both the mainscheme and crosslines.

L. JUNCTIONS SEE SECTION 5. OF THE EVALUATION REPORT.

This survey does not junction with any current surveys.

M. COMPARISON WITH PRIOR SURVEYS SEE ALSO SECTION 6. OF THE EVALUATION REPORT.

M.1 The following prior surveys are applicable to this survey:

Survey Registry #	Date	Scale
H-8615	1963 (1-63)	1:10,000
H-8616	1962	1:10,000
H-6443	1939	1:10,000 (1:40,000)

M.2 AWOIS investigation information can be found in section N.

M.3 The overall quality of agreement across the entire survey area (all AWOIS items) is generally very good: always within 1 meter (3 feet), and normally less than 0.5 meters (1.5 feet). Also, current soundings were always deeper than prior survey depths. A comparison of all survey depths was made with the largest scale chart of the area (13215), and the quality of agreement matched that of the prior surveys.

Overlays were generated (NAD 83) for all the AWOIS search areas: two at 1:10,000 (for H-8615 and H-8616) and one at 1:40,000 for survey H-6443 and chart 13215. These overlays were the primary tool utilized for prior survey and chart comparison.

M.4 It seems all soundings acquired during this survey were deeper than depths from prior surveys and chart 13215. This difference (maximum of 3 feet) is most likely a combination of factors, such as the use of predicted tides for survey soundings and conservative selection of charted depths from prior surveys. After the application of approved tides, some of the discrepancies should be resolved. APPROVED TIDES APPLIED DURING OFFICE PROCESSING.

M.5 The relatively small search radii assigned to the AWOIS items in this survey did not produce large numbers of soundings for comparison. Nor were they sufficient for "significant feature" comparison or disproval. Therefore, no significant features or depths form prior surveys have been disproved. CONCUR

M.6 As stated in section M.5 above, the extent of the areas investigated did not warrant the possibility of individual feature investigation.

M.7 The RUDE is aware of no authoritative non-NOS surveys of the area covered during this survey.

N. COMPARISON WITH THE CHART SEE ALSO SECTION 7.9. OF THE EVALUATION REPORT.

Each AWOIS item is addressed separately. This project consists of seven AWOIS items: items 1832, 1856, 2627 and 7478 were located and items 1849, 7477 and 7481 were disproved.

Refer to section M.3 for comparisons with prior survey depths (sections N.11 and N.12).

AWOIS 1832 **Sheet 12**

SHEET 1 OF 4

N.1 Item Description

The object of this investigation was the dredge "Progress" which sank from unknown causes while being towed by the tug "Mary Arnold" (AWOIS 7478), on November 23,1940. The tugs position was approximately 2 miles south of Charleston Breachway, Rhode Island.

N.2 Item Location

Geographic position provided was: 41° 20' 06.36" N (NAD 83)
71° 37' 34.21" W

N.3 Source of Item

The AWOIS listing states "Old Coast Guard Records" as the source of this item.

N.4 Largest Scale Chart Affected

Chart 13215, scale 1:40,000, 12th edition, dated June 23,1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area. This search area was centered around Loran rates from the AWOIS listing. The wreck was located using side scan sonar and investigated by ships divers on 25 July, 1991 to determine a least depth. The exact position of the least depth was determined by positioning the ship directly of over the dive buoy (which the divers placed at the sight of the least depth measurement), and taking a detached position when a spike of the corresponding height was seen on the DSF-6000.

N.6 Investigation Results

The divers reported that the dredge is severely deteriorated . What remains is a great deal of machinery that appears to be very large gears, 6 to 8 feet in diameter and some large steel beams. The shoalest point of this wreck was at the top of one of these gears. It was here that the least depth was determined three times by pneumatic depth gauge. This depth was 15.5 meters at the time of the survey. Diver's depth gauges found the bottom to

be 58 feet (17.7 meters) and the least depth of the wreck to be 51 feet (15.~~4~~ 3 meters). This wreck was searched from end to end by the divers and the bottom surrounding this wreck was also searched to the extent of the visibility which was approximately 20 feet. The bottom is composed of coarse grain sand and small pebbles.

Least depth information for the item is as follows:

FIX NUMBER-		156
LATITUDE-	41° 20'	09.~~63~~ 52" N
LONGITUDE-	71° 37'	47.~~91~~ 86" W
LEAST DEPTH (MLLW)-		15.~~4~~ 3 meters (50 FT)

N.7 Explanation for Position Difference

The original position of the wreck is approximately 400 meters from the new position listed above. Considering the circumstances and age of the original report, this difference is minimal.

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation

Delete the currently charted "dangerous wreck (PA)" symbol, and chart symbol 27 from Chart Number 1: "Wreck, least depth known by diver" with a depth of 15.~~4~~ 3 meters (50 FT), 15³WK, AND A DANGER CURVE, at the position listed above. CONCUR

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

AWOIS 7478 **Sheet 12**

Sheet 1 of 4

N.1 Item Description

The object of this investigation was the tug "Mary Arnold" which sank for unknown reasons while towing the dredge "Progress" (AWOIS 1832) on November 23,1940. The position was reported as approximately 2 miles south of the Charleston Breachway, Rhode Island.

N.2 Item Location

Geographic position provided was: 41° 20' 02.36" N (NAD 83)
71° 37' 34.21" W

N.3 Source of Item

Although not listed with this item's description, the "Progress" (AWOIS 1832) listing states "Old Coast Guard Records" as its source.

N.4 Largest Scale Chart Affected

Chart 13215, scale 1:40,000, 12th edition, dated June 23,1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area. This search area was centered around Loran rates from the AWOIS listing. The wreck was located using side scan sonar and investigated by ships divers on 25 July, 1991 to determine a least depth. The exact position of the least depth was determined by positioning the ship directly of over the dive buoy (which the divers placed at the sight of the least depth measurement), and taking a detached position when a spike of the corresponding height was seen on the DSF-6000.

N.6 Investigation Results

The divers reported a severely deteriorated tug with a great deal of debris, primarily steel and some wood, scattered about the site. Most of the debris was unrecognizable except the propeller, the propeller shaft, and the deck house. The deck house was the point at which the least depth was determined by pneumatic depth gauge. This depth was 13.4 ~~1~~ meters ~~(corrected)~~. Diver's depth gauges found the bottom to be 55 feet (16.8 meters) and the least depth of the wreck to be 45 feet (13.7 meters). The bottom is composed of coarse grain sand and small pebbles.

Least depth information for the item is as follows:

FIX NUMBER-		147
LATITUDE-	41° 20'	12.~~86~~ 90" N
LONGITUDE-	71° 37'	~~53.99~~ 54.05" W
LEAST DEPTH (MLLW)-		13.~~1~~ meters (42 FT)

N.7 Explanation for Position Difference

The originally reported position of the wreck is approximately 675 meters from the (true) position listed above. Considering the circumstances and age of the original report, this difference is minimal.

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation

Delete the currently charted "dangerous wreck (PA)" symbol, and chart symbol 27 from Chart Number 1: "Wreck, least depth known by diver" with a depth of 13.~~1~~ meters (42FT), at the position listed above. CONCUR W/ 13WK, AND A DANGER CURVE,

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

AWOIS 7477 **Sheet 12**

SHEET 1 OF 4

N.1 Item Description

The subject of this investigation is the fishing vessel "Heroine", a steel-hulled fishing boat that "sprang a leak" and sank on June 19, 1920.

N.2 Item Location

Geographic position provided was: 41° 20' 08.36" N (NAD 83)
71° 36' 58.21" W

N.3 Source of Item

The source is not given in the AWOIS description, however it does reference AWOIS item 2923 which was investigated by the RUDE and HECK in 1984 (OPR-B660-RU/HE-84).

N.4 Largest Scale Chart Affected

Chart 13215, scale 1:40,000, 12th edition, dated June 23,1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area centered around the Loran rates. A diver investigation was also required, if appropriate. Two hundred percent side scan sonar coverage using the 100 range scale, with 170 meter line spacing was completed on this item. There was no echosounder development since the item was not found.

N.6 Investigation Results

This item has been disproved. Nothing resembling a 100 foot wreck either in size or shape was found on the first 100% or the second 100% of side scan sonar coverage.

N.7 Explanation for Position Difference

Not applicable.

N.8 Least Depth Information

Not applicable.

N.9 Charting Recommendation

Delete the currently charted "dangerous wreck (PA)" symbol. CONCUR
SEE ALSO SECTION 7.a. OF THE EVALUATION REPORT.

N.10 Danger to Navigation Report

Not applicable.

N.1 Item Description

The object of this investigation was the coal barge Annapolis which sank after colliding with a submarine in Block Island Sound on February 17, 1945.

N.2 Item Location

Geographic position provided was: 41° 17' 54.36" N (NAD 83)
71° 38' 34.21" W

N.3 Source of Item

The AWOIS description lists three sources and three locations for the Annapolis. These are sources the RUDE and HECK wire drag survey of 1984, Mr. Richard Taracka and entry 210 of the AWOIS listing.

N.4 Largest Scale Chart Affected

Chart 13215, scale 1:40,000, 12th edition, dated June 23,1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area around the Loran-C position. If the wreck is not found within this search radius conduct a 200% side scan sonar search in a 3000 meters radius around the provided GP.

The wreck of the Annapolis was found within the search radius centered about Loran-C rates listed as the 210 entry of the AWOIS description. The wreck was located using side scan sonar and investigated by ships divers to determine a least depth. The exact position of the least depth was determined by positioning the ship directly of over the dive buoy (which the divers placed at the sight of the least depth measurement), and taking a detached position when a spike of the corresponding height was seen on the DSF-6000.

N.6 Investigation Results

The wreck was located using side scan sonar and investigated by ships divers on 31 July, 1991 to determine a least depth. The divers reported extensive wreckage at the site including sporadic accumulations of coal, along with several timbers that protrude from the bottom, some diagonally and some vertically. The least depth was determined by pneumatic depth gauge.

Least depth information for the item is as follows:

FIX NUMBER- 338

LATITUDE- 41° 18' 02.84" N

LONGITUDE- 71° 37' 31.01" W

LEAST DEPTH (MLLW)- 20.5 meters (67 FT)

N.7 Explanation for Position Difference

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation

Chart this item using symbol 29 from Chart Number 1: "Sunken wreck, not dangerous to surface navigation," at the position listed above. WITH A KNOWN DEPTH OF 24 m, (67 FT), 24 WK,

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

AWOIS 7481 **Sheet 13**

SHEET 2 OF 4

N.1 Item Description

The object of this investigation was a wreck known locally as the "North Wreck".

N.2 Item Location

Geographic position provided was: 41° 18' 21.36" N (NAD 83)
71° 37' 17.21" W

N.3 Source of Item

This AWOIS item was reported by Mr. Tim Coleman, along with Loran-C rates.

N.4 Largest Scale Chart Affected

Chart 13215, scale 1:40,000, 12th edition, dated June 23,1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area centered around the Loran rates. A diver investigation was also required, if appropriate. Two hundred percent side scan sonar coverage using the 100 range scale, with 170 meter line spacing was completed on this item. There was no echosounder development since the item was not found.

N.6 Investigation Results

This item has been disproved. There were only two contacts within the 700 meters search radius which had any possibility of being a wreck. A diver investigation on both of these contacts concluded they were not AWOIS 7481. The first contact was an insignificant pile of rocks, of which the highest point was less than one meter above the bottom. The second was an old wooden rudder approximately 3 meters wide by 4 meters long. This rudder was laying flat on the bottom and rose less than 0.25 meters above the bottom.

N.7 Explanation for Position Difference

Not applicable.

N.8 Least Depth Information

Not applicable.

N.9 Charting Recommendation

Delete the symbol "Sunken wreck, not dangerous to surface

navigation, PA" from chart 13215, at the position listed in section N.2. CONCUR IT IS ALSO RECOMMENDED THAT THE 21' OBSTR (RUDDER) AND THE 21' OBSTR (RK PILE) NOT BE CHARTED

N.10 Danger to Navigation Report

Not applicable.

AWOIS 1849 **Sheet 14**

SHEET 3 OF 4

N.1 Item Description

The subject of this investigation is the wreck of the "Amelia M. Periera", an 88 foot wooden fishing schooner which sank sometime prior to World War II.

N.2 Item Location

Geographic position provided was: 41° 16' 12.36" N (NAD 83)
71° 40' 13.22" W

N.3 Source of Item

The AWOIS has the Old Coast Guard as the source of the information on this wreck.

N.4 Largest Scale Chart Affected

Chart 13215, scale 1:40,000, 12th edition, dated June 23,1990.

N.5 Investigation Procedures

Survey requirements called for 200% side scan sonar coverage in conjunction with echosounder development in a 700 meter radius search area centered around the Loran rates. A diver investigation and least depth were required if the item was found. The AWOIS listing also states not to expend more than two hours searching for this item.

N.6 Investigation Results

This item has been disproved. The search area (centered about Loran-C rates) was covered with approximately 100% side scan sonar (six holidays remain). The holidays were not covered because of the high density of fishing gear in the area. The ship attempted to survey this item on three different days and each day the towfish was either hung up in the fishing gear or the electrical connection to the towfish was destroyed.

Given the "do not expend more than two hours searching for this item" criteria, the fact that the FE270WD/84 (RUDE/HECK) survey found no trace of this wreck, the 50 year age, and that it is a wood-hulled vessel in over 36 meters (120 feet) of water, the hydrographers opinion is that AWOIS 1849 is either insignificant wreckage or no longer exists.

N.7 Explanation for Position Difference

Not applicable.

N.8 Least Depth Information

Not applicable.

N.9 Charting Recommendation

~~Take no action;~~ THE **item was not found in this location and no symbol is charted at the listed position.** CONCUR

NO CHANGE IN CHARTING IS RECOMMENDED.

N.10 Danger to Navigation Report

Not applicable.

N.1 Item Description

The subject of this investigation has two possible identities according to the AWOIS description: the item is listed as the tug "Hercules" (sunk December 14, 1903), but local reports claim the tug may be the "William Maloney" (sunk November 1924).

N.2 Item Location

Geographic position provided was: 41° 17' 12.36" N (WAD 83)
71° 46' 10.23" W

N.3 Source of Item

The AWOIS lists Mr. Frank Johnson, of Scuba Charter "HEY BO", Mystic, Connecticut and Mr. Richard Taracka, Greenwich, Connecticut, Police Department, as sources of information on this wreck.

N.4 Largest Scale Chart Affected

Chart 13215, scale 1:40,000, 12th edition, dated June 23,1990.

N.5 Investigation Procedures

The wreck was located using side scan sonar and investigated by divers on 06 August, 1991 to determine a least depth.
The position of the least depth was determined by positioning the ship directly over the dive buoy which the divers placed at the location of the least depth.

N.6 Investigation Results

The divers reported the wreck to be approximately 60 feet long with the bow relatively in tact. Large bitts were found on both the bow and the stern. After though investigation of the entire wreck, the bitt on the bow was determined to be the shoalest point. Due to wind and current at the dive sight a pneumatic depth gauge reading was not possible. Therefore the ships DSF-6000 was used to determine the least depth of 27.~~6~~3 meters (fix no. 418). The fathometer least depth compares well with the depths observed on the divers depth gauges of 91 feet (27.7 meters). ~~Correcting these values with predicted tides (0.2 meters) yields a least depth of 27.5 meters.~~

A determination as to the exact identity of the tug could not be made by the divers, due to the extent of deterioration.

Least depth (by DSF-6000) information for the item is as follows:

FIX NUMBER-		418
LATITUDE-	41° 17'	15.~~79~~ 81" N
LONGITUDE-	71° 46'	14.5~~0~~ 1" W
LEAST DEPTH (MLLW)-		27.~~0~~ 3 meters (89 FT)

N.7 Explanation for Position Difference

The original position is approximately 150 meters Southeast of the new position. This difference is minimal, considering the age and conditions of the original report.

N.8 Least Depth Information

See section "N.6".

N.9 Charting Recommendation

Delete the currently charted wreck symbol and "PA", and chart symbol 29 (section K) from Chart No. 1 "Sunken wreck, not dangerous to surface navigation," in the new position. CONCUR WITH A KNOWN DEPTH OF 27.3m, (89FT), 27.3WK)

N.10 Danger to Navigation Report

This item was not reported as a danger to navigation.

O. ADEQUACY OF SURVEY SEE SECTION 9 OF THE EVALUATION REPORT.

O.1 All AWOIS items included in this survey have been resolved.

O.2 There are no parts of this survey that are considered incomplete or substandard.

P. AIDS TO NAVIGATION

P.1 The RUDE conducted no correspondence with the U.S. Coast Guard regarding floating aids to navigation.

P.2 No aids to navigation were investigated for positioning during this survey.

P.3 No other aids were located during the survey.

P.4 No bridges, overhead cables or overhead pipelines are located within the survey area.

P.5 A charted cable lane, approximately 1.6 nautical miles wide, extends from Quonchontaug to Block Island, Rhode Island. No cables were detected by the RUDE during this survey.

P.6 No ferry terminals are located within the survey area.

Q. STATISTICS

Q.1	a) Number of positions	427
	b) Lineal nautical miles of sounding lines	33
Q.2	a) square nautical miles of hydrography	N/A
	b) days of production	12
	c) detached positions	29
	d) bottom samples	0
	e) tide stations	1
	f) current stations	0
	g) velocity casts	2
	h) magnetic stations	0
	i) XBT drops	0

R. MISCELLANEOUS

R.1 During this survey the Differential Global Positioning System (DGPS) was used in a test mode, where positions were logged simultaneously with Falcon Mini-Ranger data. DGPS positions were compared with the Falcon positions in a post survey mode. Comparisons made during this survey proved that the accuracy of DGPS positioning meets requirements for a 1:10,000 scale survey. DGPS was later used as the primary positioning system for a basic hydrographic survey, based on the test results of this survey.

R.2 Bottom samples were not required for this project.

S. RECOMMENDATIONS

SEE ALSO SECTION 9. OF THE EVALUATION REPORT.

S.1 No survey inadequacies have been noted.

S.2 The RUDE is aware of no construction or dredging that will affect results of this survey.

S.3 Provided that the application of approved tides will not substantially alter survey data, no further investigation of the survey area is recommended. The existing charted depths adequately represent current soundings (see section N), and a basic survey of any of the area covered is not recommended. CONCUR

T. REFERRAL TO REPORTS

RUDE Electronic Control Report - 1991 Field Season
(submitted to N/CG244 concurrent with this survey)

Horizonal Control Report - 1991 Field Season
(submitted by N/CG23322)

CONTROL STATIONS as of 10 Mar 1992

No	Type	Latitude	Longitude	H	Cart	Freq	Vel	Code	MM/DD/YY	Station Name
202	A	041:09:10.210	071:33:02.019	0	250	1646.7	299670.0	2	06/26/91	BLOCK IS. SE LIGHTHOUSE OFFSET, 1991
111	F	041:21:15.270	071:30:26.176	7	250~~4~~	0.0	0.0	6	07/15/91	MAIN BKWRTR CTR LT 2 - 1948
113	F	041:21:39.621	071:28:53.02~~4~~31	20	250	0.0	0.0	8	07/15/91	PT JUDITH LIGHT OFFSET 2, 1991
114	F	041:13:39.514	071:34:33.030	16	250~~4~~	0.0	0.0	5	07/15/91	BLOCK ISLAND N LIGHT OFFSET, 1991
116	F	041:21:54.865	071:35:42.10~~7~~6	8	250~~4~~	0.0	0.0	4	07/15/91	GREEN HILL BEACH, 1991
117	F	041:18:14.045	071:51:30.~~689~~ 690	18	250~~4~~	0.0	0.0	3	07/16/91	WATCH HILL LIGHT OFFSET #2, 1991

↑ (ANTENNA HEIGHT)

ALL STATIONS ARE FIELD POSITIONS

EXCEPT STATION 111

ACTUAL NAME:
MAIN BR C LT 2 1948

← (MAIN BRKWRTR CTR LT 2-1948)

QIDQSN: 4107131200Z2

NOTE:
STATION 202 WAS USED ONLY ONCE AND IS NOT INCLUDED IN CALIBRATION SECTION. (SEE SECTION "I" IN TEXT)

APPENDIX VII. APPROVAL SHEET

LETTER OF APPROVAL

REGISTRY NO. FE-363SS

Field operations contributing to the accomplishment of this survey were conducted under my supervision with frequent personal checks of progress and adequacy. This report and field sheets have been closely reviewed and are considered complete and adequate for charting.

Nicholas E. Perugini

Nicholas E. Perugini, LCDR NOAA
Commanding Officer
NOAA Ship RUDE

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
Office of Ocean and Earth Sciences
Rockville, Maryland 20852

TIDE NOTE FOR HYDROGRAPHIC SURVEY

DATE: February 11, 1992

MARINE CENTER: Atlantic

OPR: B660-RU-91

HYDROGRAPHIC SHEET: FE-363SS

LOCALITY: Rhode Island, Block Island Sound, Offshore - Green Hill to Weekapaug Point

TIME PERIOD: July 24 - August 6, 1991

TIDE STATION USED: 845-5083 Point Judith, Rhode Island
Lat. 41° 21.8'N Lon. 71° 29.4'W

PLANE OF REFERENCE (MEAN LOWER LOW WATER): 6.34 ft.

HEIGHT OF HIGH WATER ABOVE PLANE OF REFERENCE: 3.2 ft.

REMARKS: RECOMMENDED ZONING

Apply a +30 minute time correction and a x0.85 height ratio to Point Judith, Rhode Island (845-5083).

Note: Times are tabulated in Eastern Standard Time.

for Brian K. Cole
CHIEF, DATUMS SECTION

NOAA FORM 76-155
(11-72)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

GEOGRAPHIC NAMES

SURVEY NUMBER

FE-363 SS

Name on Survey	A ON CHART NO.	B ON PREVIOUS SURVEY NO.	C ON U.S. QUADRANGLE MAPS	D FROM LOCAL INFORMATION	E ON LOCAL MAPS	F P.O. GUIDE OR MAP	G RAND MCNALLY ATLAS	H U.S. LIGHT LIST	K	
BLOCK ISLAND SOUND (title)										1
GREEN HILL BEACH (title)										2
RHODE ISLAND (title)										3
WEEKAPAUG POINT (title)										4
										5
										6
										7
										8
										9
										10
										11
										12
										13
										14
				Approved:						15
										16
				Charles E. Harrington						17
				Chief Geographer - NOAA						18
				SEP 17 1993						19
										20
										21
										22
										23
										24
										25

NOAA FORM 76-155 SUPERSEDES C&GS 197

10/28/93

HYDROGRAPHIC SURVEY STATISTICS
REGISTRY NUMBER: FE-363SS

NUMBER OF CONTROL STATIONS	6
NUMBER OF POSITIONS	427
NUMBER OF SOUNDINGS	1525

	TIME-HOURS	DATE COMPLETED
PREPROCESSING EXAMINATION	81	09/11/92
VERIFICATION OF FIELD DATA	85	07/14/92
ELECTRONIC DATA PROCESSING	21	
QUALITY CONTROL CHECKS	47	
EVALUATION AND ANALYSIS	32	10/18/93
FINAL INSPECTION	7	10/15/93
TOTAL TIME	273	

ATLANTIC HYDROGRAPHIC SECTION APPROVAL 10/21/93

NOAA FORM 61-29
(12-71)

U. S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

REFERENCE NO.
N/CG244-129-93

LETTER TRANSMITTING DATA

DATA AS LISTED BELOW WERE FORWARDED TO YOU BY *(Check)*:

☐ ORDINARY MAIL ☐ AIR MAIL

☐ REGISTERED MAIL X ☐ EXPRESS

☐ GBL *(Give number)* _____

TO:

Dept. of Commerce, NOAA/NOS
N/CG243, Data Control Section
SSMC3, Station 6815
Silver Spring, MD 20910

DATE FORWARDED
29 October 1993

NUMBER OF PACKAGES
1 box

NOTE: A separate transmittal letter is to be used for each type of data, as tidal data, seismology, geomagnetism, etc. State the number of packages and include an executed copy of the transmittal letter in each package. In addition the original and one copy of the letter should be sent under separate cover. The copy will be returned as a receipt. This form should not be used for correspondence or transmitting accounting documents.

FE-363SS

Rhode Island, Block Island Sound, Offshore---Green Hill Beach To Weekapaug Point

1 Box containing:

- 1 **Original Descriptive Report for FE-363SS** with page size plots
- 1 Envelope containing Data removed from the original Descriptive Report
- 1 Envelope containing Supplemental data removed from printouts
- 1 Cahier with final Position, Sounding, and L-File
- 1 Accordion file containing: fathograms, daily printouts, and side scan sonargrams for VESNO 9040 for JDs: 205-207, 210-214, 217-218
- 1 Envelope containing Excess Level Plots

FROM: *(Signature)*
Franklin L. Saunders

RECEIVED THE ABOVE
(Name, Division, Date)
D. S. Clark
Nov. 3, 1993

Return receipted copy to:

Atlantic Hydrographic Section, N/CG244
439 W. York Street
Norfolk, VA 23510-1114

NOAA FORM 61-29 SUPERSEDES FORM C&GS 413 WHICH MAY BE USED.

☆U.S.GPO:1983-0-664-006/1192

COAST AND GEODETIC SURVEY
ATLANTIC HYDROGRAPHIC SECTION
EVALUATION REPORT

SURVEY NO.: FE-363SS **FIELD NO.**: RU-10-4-91

Rhode Island, Block Island Sound, Offshore---Green Hill Beach to Weekapaug Point

SURVEYED: 24 July through 6 August 1991

SCALE: 1:10,000 **PROJECT NO.**: OPR-B660-RU-91

SOUNDINGS: RAYTHEON DSF-6000N Fathometer, and Pneumatic Depth Gauge (PDG)

CONTROL: MOTOROLA Falcon 484 Mini-Ranger (Range/Range)

Chief of Party.....N. E. Perugini

Surveyed by.....P. L. Schattgen
.....M. J. Oberlies
.....J. A. Illg
.....D. E. Williams

Automated Plot by.....XYNETICS 1201 Plotter (AHS)

1. INTRODUCTION

a. This is primarily a side scan sonar survey. A RAYTHEON DSF-6000N fathometer was operated concurrently with the side scan sonar. A pneumatic depth gauge was used to determine least depths during dive operations.

b. Four 1:20,000 scale page size plots were generated during office processing and are attached to this report. These plots are considered the smooth sheet and final plots for this survey.

c. No unusual problems were encountered during office processing.

d. Notes in the Descriptive Report were made in red during office processing.

2. CONTROL AND SHORELINE

a. Control is adequately discussed in sections H. and I. of the Descriptive Report.

Horizontal control used for this survey during data acquisition is based upon the North American Datum of 1983 (NAD 83). Office processing of this survey is based on these values. The smooth sheets have been annotated with ticks

showing the computed mean shift between the NAD 83 and the North American Datum of 1927 (NAD 27).

To place this survey on NAD 27 move the projection lines 0.361 seconds (11.151 meters or 1.115 mm at the scale of the survey) north in latitude, and 1.763 seconds (41.025 meters or 4.102 mm at the scale of the survey) east in longitude.

b. There is no shoreline within the limits of this survey.

3. HYDROGRAPHY

a. Where applicable, soundings at crossing are in adequate agreement.

b. Standard depth curves were drawn in their entirety.

c. The development of the bottom configuration and determination of least depths are considered adequate.

4. CONDITION OF SURVEY

The smooth plots, accompanying overlays, hydrographic records, and reports are adequate and conform to the requirements of the HYDROGRAPHIC MANUAL, SIDE SCAN SONAR MANUAL, FIELD PROCEDURE MANUAL, and the PROJECT INSTRUCTIONS.

5. JUNCTIONS

There are no contemporary junctional surveys.

6. COMPARISON WITH PRIOR SURVEYS

a. Hydrographic

H-6443 (1939)	1:40,000
H-8615 (1961-63	1:10,000
H-8616 (1962)	1:10,000

The prior surveys listed above covers the present survey area in its entirety.

Prior survey depths from H-6443 (1939) compare favorably with the present survey and show a general trend of being 0^3 m (1 ft) shoaler than present survey soundings.

Prior survey depths from H-8615 (1961-63) compare favorably with the present survey and show a general trend of being 0^6 m (2 ft) shoaler than present survey soundings.

Prior survey depths from H-8616 (1962) compare favorably with the present survey and show a general trend of being 0^3 m (1 ft) shoaler than present survey soundings.

The present survey is adequate to supersede the prior surveys in the common areas.

b. Wire Drag

FE-270WD (1984) 1:20,000

There are no hangs or side scan sonar contacts from prior survey FE-270WD (1984) that fall in an area common to the present survey.

There are no conflicts between prior survey effective clearance depths and the present survey soundings.

7. COMPARISON WITH CHARTS 13205 (30th. Edition, 18 May 1991)
13215 (12th. Edition, 23 June 1990)

a. Hydrography

The charted hydrography originates with previously discussed prior surveys and requires no further consideration. The following should be noted:

Four significant side scan sonar contacts were noted during office processing. The positions and heights of the contacts were scaled from side scan sonargrams and are listed below.

Contact (m/ft)	Latitude (N)	Longitude (W)
13^5*Rk (A)*/44	41°20'20.10"	71°36'38.35"
14 *Rk (A)*/46	41°20'28.94"	71°36'38.48"
14^7*Rk (A)*/48	41°20'23.08"	71°36'53.34"
15^8*Rk (A)*/52	41°20'05.85"	71°36'56.20"

It is recommended that these rocks with estimated depths be charted in accordance with Cartographic Order 004/89, dated 3 July 1989. It is recommended that the rocks be investigated at an opportune time. See sheet 1 of 4.

Except as noted above the present survey is adequate to supersede the charted hydrography within the common areas.

b. Dangers to Navigation

There were no dangers to navigation submitted by the field unit. No dangers were discovered during office processing.

c. Aids to Navigation

No fixed or floating aids to navigation were investigated during the present survey.

8. COMPLIANCE WITH INSTRUCTIONS

This survey complies with the Project Instructions.

9. ADDITIONAL WORK

This is an adequate side scan sonar survey. Additional work is recommended for items discussed in section 7.a. of this report.

Reginald L. Keene, Sr.
Cartographic Technician
Verification of Field Data

Norris A. Wike
Cartographer
Evaluation and Analysis

Leroy G. Cram
Supervisory Cartographic Technician
Verification Check

APPROVAL SHEET
FE-363SS

Initial Approvals:

The completed survey has been inspected with regard to survey coverage, delineation of depth curves, development of critical depths, cartographic symbolization, and verification or disproval of charted data. The digital data have been completed and all revisions and additions made to the smooth sheet during survey processing have been entered in the magnetic tape record for this survey. Final control, position, and sounding printouts of the survey have been made. The survey records and digital data comply with NOS requirements except where noted in the Evaluation Report.

Leroy G. Cram Date: 10/18/93
Leroy G. Cram
Chief, Hydrographic Processing Team B
Atlantic Hydrographic Section

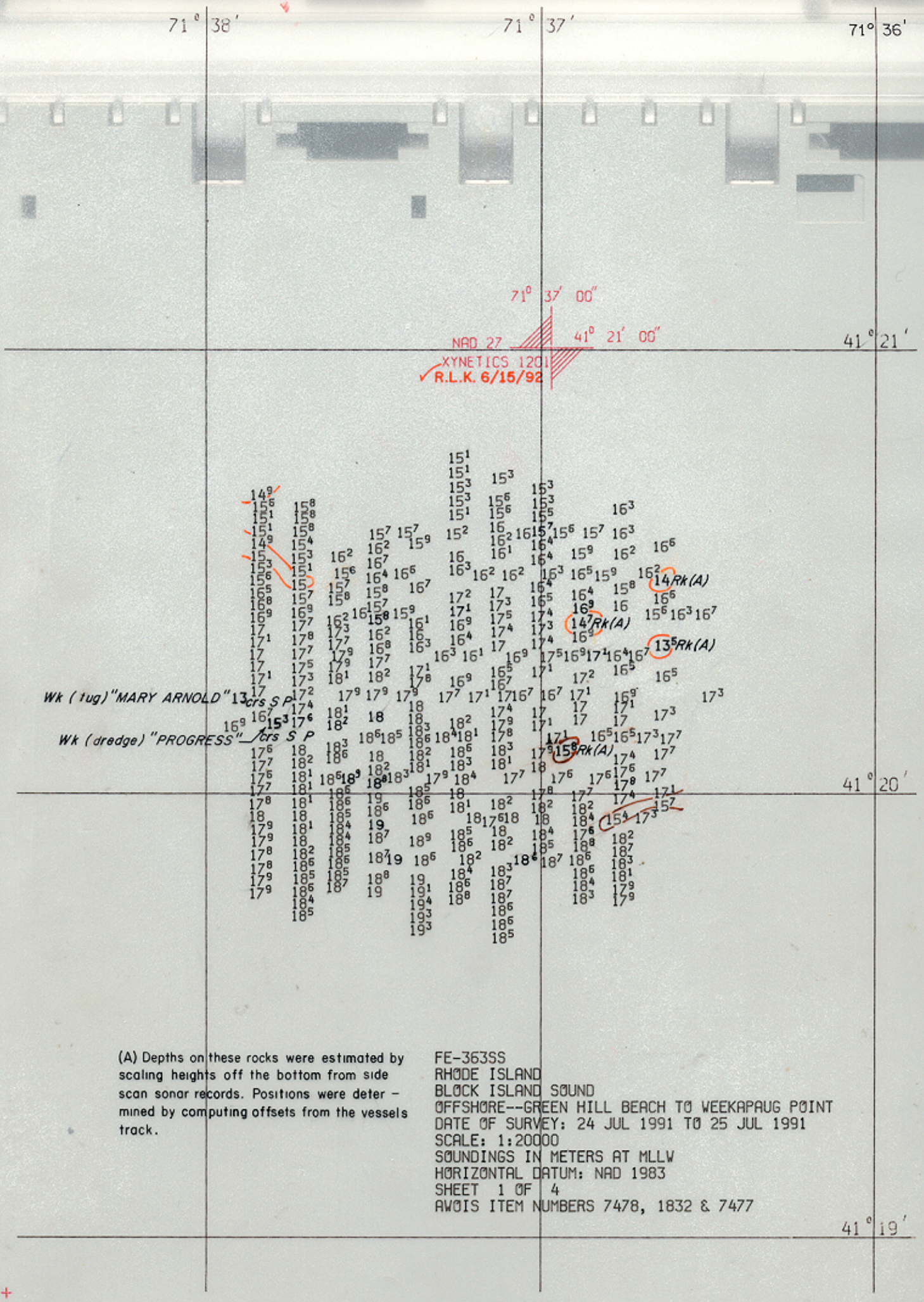
I have reviewed the smooth sheet, accompanying data, and reports. This survey and accompanying digital data meet or exceed NOS requirements and standards for products in support of nautical charting except where noted in the Evaluation Report.

Nicholas E. Perugini Date: 10/21/93
Nicholas E. Perugini, LCDR, NOAA
Chief, Atlantic Hydrographic Section

****

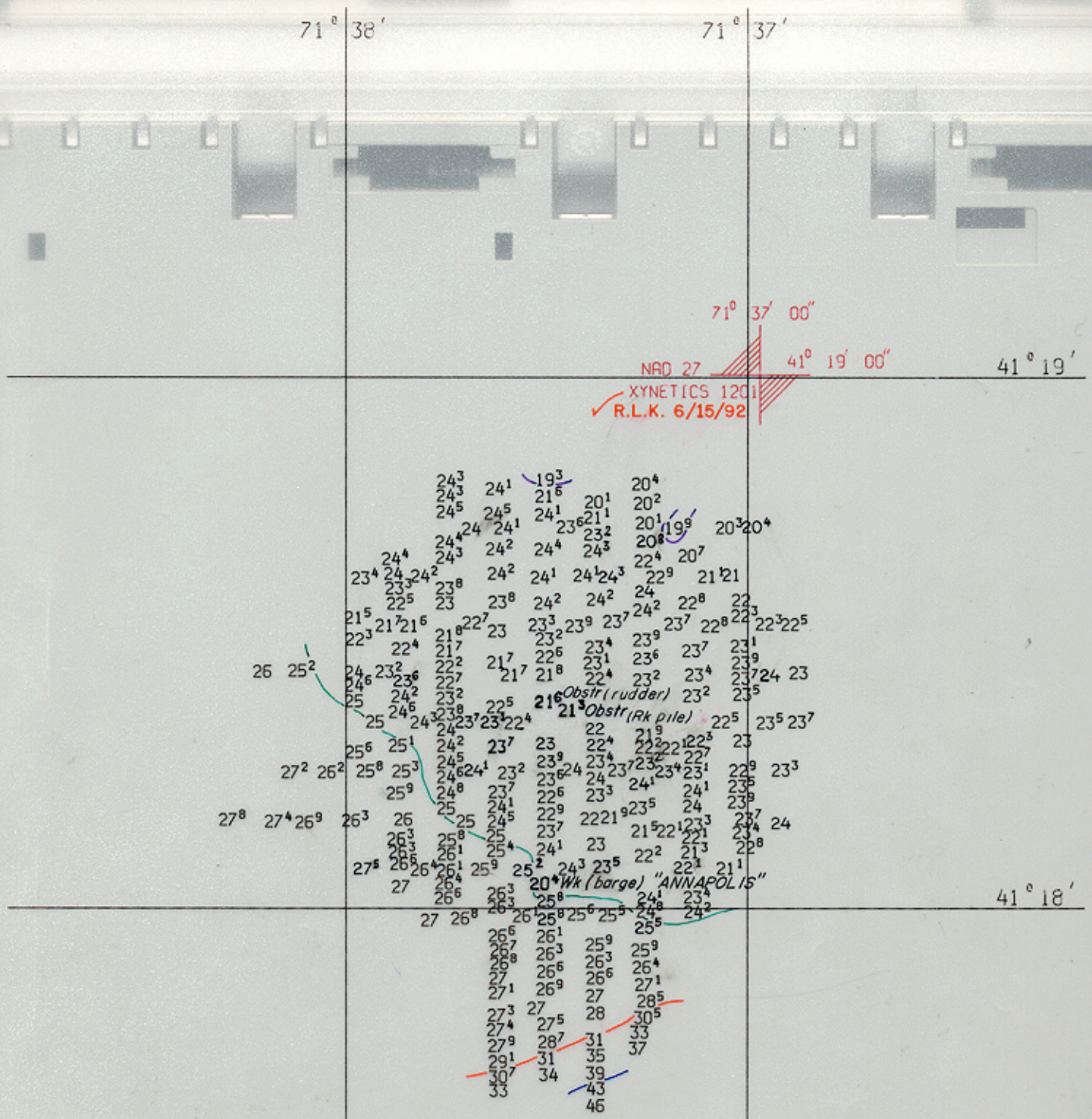
Final Approval:

Approved: J. Austin Yeager Date: 11/22/93
J. Austin Yeager
Rear Admiral, NOAA
Director, Coast and Geodetic Survey

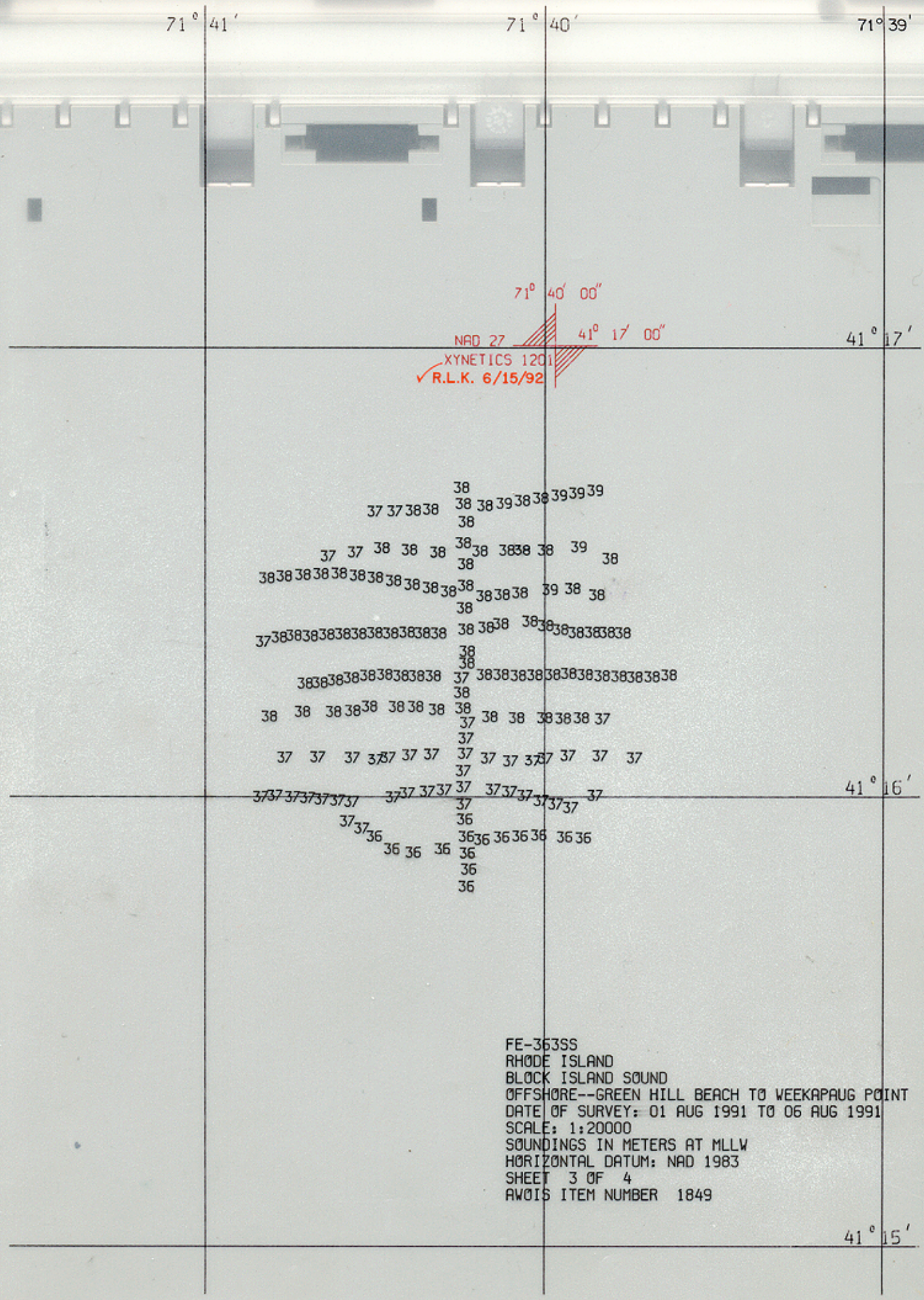


(A) Depths on these rocks were estimated by scaling heights off the bottom from side scan sonar records. Positions were deter - mined by computing offsets from the vessels track.

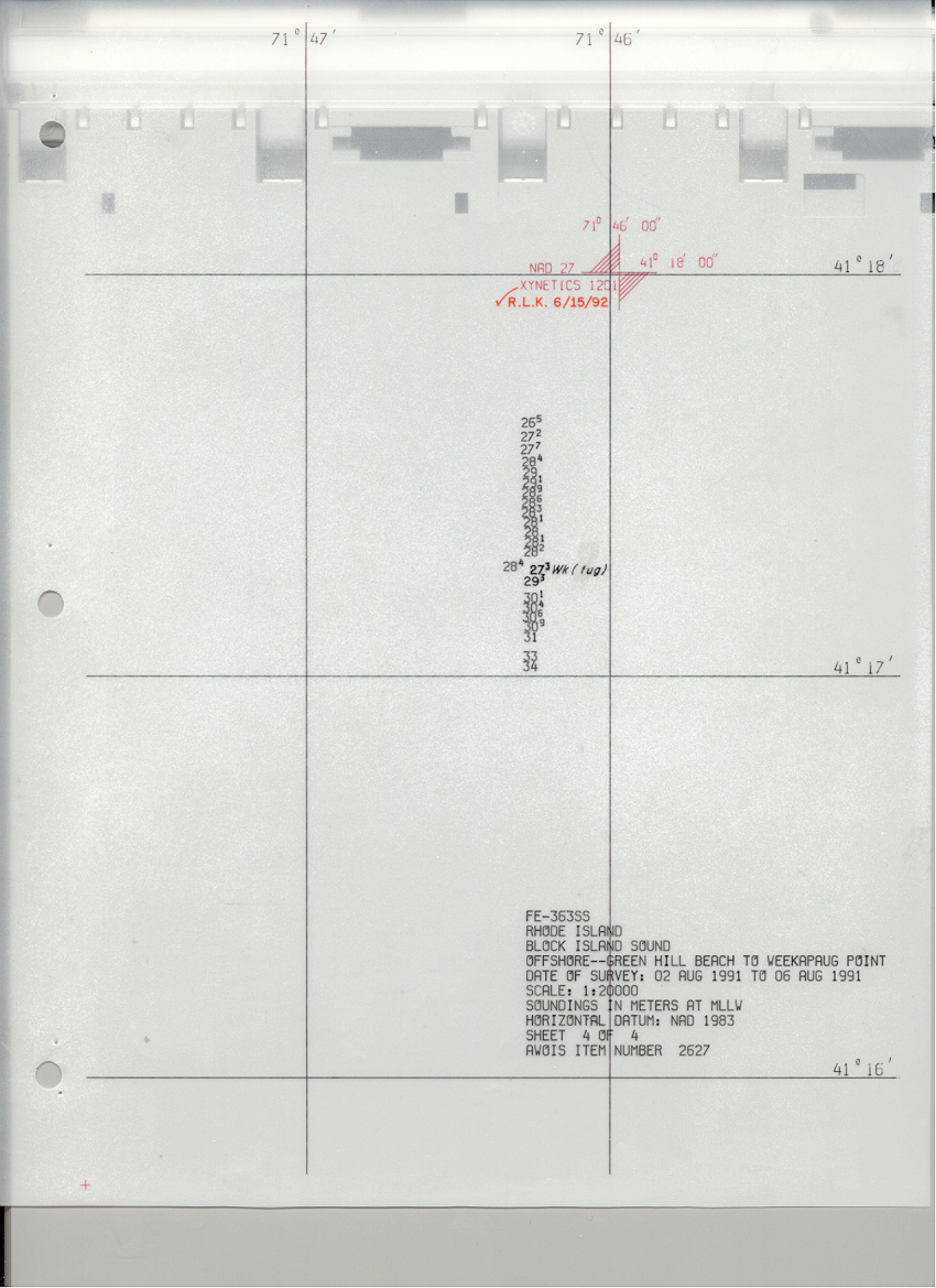
FE-363SS
RHODE ISLAND
BLOCK ISLAND SOUND
OFFSHORE--GREEN HILL BEACH TO WEEKAPAUG POINT
DATE OF SURVEY: 24 JUL 1991 TO 25 JUL 1991
SCALE: 1:20000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 1 OF 4
AWOIS ITEM NUMBERS 7478, 1832 & 7477



FE-363SS
RHODE ISLAND
BLOCK ISLAND SOUND
OFFSHORE--GREEN HILL BEACH TO WEEKAPAUG POINT
DATE OF SURVEY: 25 JUL 1991 TO 01 AUG 1991
SCALE: 1:20000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 2 OF 4
AWOIS ITEM NUMBERS 1856, 7481



FE-363SS
RHODE ISLAND
BLOCK ISLAND SOUND
OFFSHORE--GREEN HILL BEACH TO WEEKAPAUG POINT
DATE OF SURVEY: 01 AUG 1991 TO 06 AUG 1991
SCALE: 1:20000
SOUNDINGS IN METERS AT MLLW
HORIZONTAL DATUM: NAD 1983
SHEET 3 OF 4
AWOIS ITEM NUMBER 1849



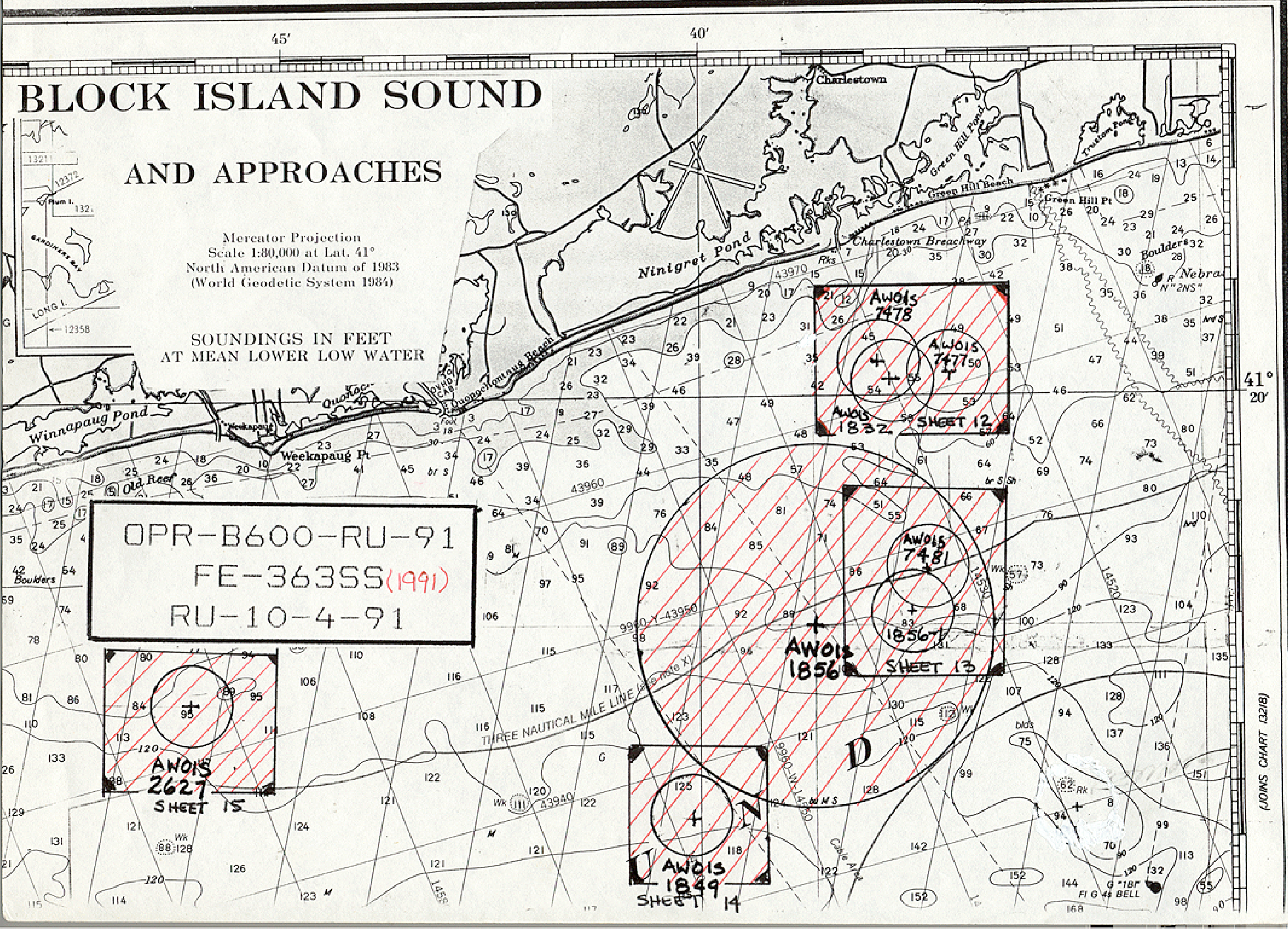
FE-363SS
RHØDE ISLAND
BLØCK ISLAND SØUND
ØFFSHØRE--GREEN HILL BEACH TØ WEEKAPAUG PØINT
DATE ØF SURVEY: 02 AUG 1991 TØ 06 AUG 1991
SCALE: 1:20000
SØUNDINGS IN METERS AT MLLW
HØRIZØNTAL DATUM: NAD 1983
SHEET 4 ØF 4
AWØIS ITEM NUMBER 2627

ABBREVIATIONS. (For complete list of Symbols and Abbreviations, see Chart No. 1.)
COLREGS: International Regulations for Preventing Collisions at Sea, 1972.
Demarcation lines are shown thus: — — — — —

Nautical Chart Catalog No. 1, Panel G

13205

LORAN-C OVERPRINTED



NOAA FORM 75-96
(10-83)

U.S. DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION

MARINE CHART BRANCH

RECORD OF APPLICATION TO CHARTS

FILE WITH DESCRIPTIVE REPORT OF SURVEY NO. FE-363SS

INSTRUCTIONS

A basic hydrographic or topographic survey supersedes all information of like nature on the uncorrected chart.

1. Letter all information.
2. In "Remarks" column cross out words that do not apply.
3. Give reasons for deviations, if any, from recommendations made under "Comparison with Charts" in the Review.

CHART	DATE	CARTOGRAPHER	REMARKS
13215	12/9/93	Dan Flack	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 14
13205	12/9/93	Dan Flack	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 55 APP'D THRU 13215
12300	12/13/93	Dan Flack	Full ~~Part Before~~ After Marine Center Approval Signed Via
			Drawing No. 57 APP'D THRU 13205
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.
			Full Part Before After Marine Center Approval Signed Via
			Drawing No.

SUPERSEDES C&GS FORM 8352 WHICH MAY BE USED